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(12) **United States Patent**  
**Ichioaka et al.**

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(54) **DAMPER AND HANDLE DEVICE HAVING THE SAME**

(56) **References Cited**

U.S. PATENT DOCUMENTS

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- RE19,631 E \* 7/1935 Peo ..... F16F 9/145  
188/308  
2,914,943 A \* 12/1959 Ballard ..... G01F 1/80  
73/861.353  
5,178,242 A \* 1/1993 Nakamura ..... F16F 9/468  
188/282.1  
6,267,040 B1 \* 7/2001 Sonoda ..... B62D 5/062  
91/420  
6,662,683 B1 \* 12/2003 Takahashi ..... B60N 3/023  
188/290  
2010/0282553 A1 \* 11/2010 Cultraro ..... F16F 9/145  
188/290

FOREIGN PATENT DOCUMENTS

- JP 2002-221247 A 8/2002  
JP WO 2015115487 A1 \* 8/2015 ..... F16F 9/12  
\* cited by examiner

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(57) **ABSTRACT**

An embodiment provides a damper a damper including: a housing; a rotor; and a sealing member. The housing includes outer and inner cylinder portions to define a filling space portion therebetween for filling with a viscose fluid. The rotor includes a head portion and a cylinder portion extended downwardly therefrom so as to be inserted into the filling space portion. The sealing member seals the filling space portion. The rotor further includes axially-extending first and second groove portions provided on outer and inner peripheral surfaces of the cylinder portion near the bottom portion thereof. At least one of the first groove portions includes a communicating portion which communicates the inside and the outside of the rotor, and the second groove portion is apart from the communicating portion in a circumferential direction.

**15 Claims, 6 Drawing Sheets**

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CPC ..... **F16F 9/12** (2013.01); **B60N 3/023** (2013.01)

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See application file for complete search history.

